

TABLE 2.—Free-air resultant winds (meters per second) based on pilot balloon observations made near 7 a.m. (E.S.T.) during November 1933—Continued

Altitude (meters) m.s.l.	Los Angeles, Calif. (217 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (83 meters)		New Orleans, La. (2 meters)		Oakland, Calif. (8 meters)		Oklahoma City, Okla. (402 meters)		Omaha, Nebr. (306 meters)		Phoenix, Ariz. (338 meters)		Salt Lake City, Utah (1,294 meters)		Sault Ste. Marie, Mich. (198 meters)		Seattle, Wash. (14 meters)		Washington, D.C. (10 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface.....	359	0.8	189	0.6	262	0.7	34	1.2	31	1.1	262	1.3	311	0.7	90	1.8	141	3.5	53	1.0	153	1.5	297	1.9
500.....	28	.8	246	.2	272	4.7	40	1.7	30	4.3	222	2.8	294	3.3	79	3.8	140	1.1	140	1.1	221	4.1	289	5.9
1,000.....	44	1.7	137	1.0	287	8.3	321	2.5	28	4.0	256	5.2	306	9.0	76	3.2	165	2.6	313	2.6	228	5.4	287	9.5
1,500.....	56	1.5	117	2.5	288	8.9	316	3.2	19	1.6	271	4.2	306	11.5	87	2.0	165	2.6	316	4.4	250	5.1	293	12.4
2,000.....	92	1.5	61	1.7	298	10.1	294	6.3	354	1.6	289	7.0	300	12.9	99	.8	228	1.3	320	7.3	243	7.5	293	13.1
2,500.....	59	.9	13	2.4	302	11.8	300	7.6	350	2.0	291	8.4	300	14.0	179	.3	304	2.3	323	9.1	243	7.5	292	14.5
3,000.....	30	1.9	360	3.7	307	9.8	310	10.4	5	1.0	292	9.7	298	16.4	273	1.6	302	3.9	310	12.2	243	7.5	292	14.5
4,000.....	189	2.2	351	3.0	307	9.8	310	10.4	188	.9	285	10.6	285	12.4	274	3.7	315	8.9	310	12.2	243	7.5	292	14.5
5,000.....									95	3.3					354	2.7	335	8.2						

RIVERS AND FLOODS

By RICHMOND T. ZOCH

[River and Flood Division, Montrose W. Hayes, in charge]

There were no floods in the rivers of the United States during November 1933.

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, W. F. McDonald, in charge]

NORTH ATLANTIC OCEAN

By W. F. McDONALD

The pressure situation.—High pressure was exceptionally persistent during November 1933 from the Azores to the Greenland Sea. The highest pressure over any part of the North Atlantic, (30.61 inches), was reported on the 9th by several ships in the vicinity of the Azores.

The major extra-tropical cyclones remained for the most part in high latitudes. The lowest recorded pressure was 28.19 inches on the 29th at Julianehaab, Greenland. The American Steamship *Quaker City* reported the lowest barometer reading at sea, 28.49 inches, on the 28th near 49°N., 45°W.

Average pressure for the month was below normal over the western Atlantic, especially in the region of Labrador and Davis Strait where the deficiency was more than two tenths of an inch. There was also a smaller deficiency in average pressure over the Iberian Peninsula. Elsewhere, Atlantic pressures were above normal with the greatest excess eastward from Iceland. (See table 1.)

Cyclones and gales.—At the opening of the month and throughout the first 10 days, storminess was mainly confined to the western Atlantic, south of the fiftieth parallel. Gales were mostly moderate to fresh, however, and in only two cases reached whole gale force, south of the Grand Banks.

From the 10th to the end of the month, gales were more widespread and in general more severe, and in the last decade winds of force 12 were encountered by two ships near mid-ocean on the main transatlantic route, in the first instance by the German Steamship *Europa* on the 22d, and again by the Danish Steamship *Marne* on the 26th. Between the 11th and 15th, on the 21st and 22d, and on the 27th and 28th winds of whole gale to storm force were experienced by a number of ships on the northern routes. (See Table of Ocean Gales and Storms.)

The increased intensity of storm conditions at the middle of the month brought about the only marine

casualty of any importance which has been reported. The British Steamship *Saxilby*, bound eastward from Newfoundland to the British Isles on the 15th, called for assistance in latitude 51°50' N., longitude 19°15' W., and stated that the crew was taking to the ship's boats in heavy seas. Several steamers responded to this distress call but no trace of ship or crew could be found.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, November 1933

Station	Average pressure	Departure	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Julianehaab, Greenland.....	29.41		30.08	3	28.19	29
Reykjavik, Iceland.....	29.75	+0.13	30.49	2	29.08	11
Lerwick, Shetland Islands.....	29.95	+0.25	30.47	18	29.44	14
Valencia, Ireland.....	29.97	+0.08	30.41	3	29.14	15
Lisbon, Portugal.....	29.95	+0.09	30.28	1	29.43	17
Madeira.....	30.05	+0.04	30.46	1	29.70	18
Horta, Azores.....	30.21	+0.08	30.58	9	29.78	27
Belle Isle, Newfoundland.....	29.65	+0.23	30.16	22	28.80	15
Halifax, Nova Scotia.....	29.90	+0.05	30.38	29	29.28	15
Nantucket.....	29.93	+0.12	30.47	17	29.14	27
Hatteras.....	30.07	+0.04	30.61	17	29.55	26
Bermuda.....	30.04	+0.04	30.36	29	29.66	7
Turks Island.....	29.94	+0.05	30.06	{ 17, 21 } 29, 30	29.74	1, 2
Key West.....	30.05	+0.03	30.36	16	29.70	1
New Orleans.....	30.15	+0.05	30.51	16	29.76	2
Cape Gracias, Nicaragua.....	29.89	+0.01	29.96	{ 10, 11 } 17	29.76	1

NOTE.—All data based mainly on a.m. observations, with departures compiled from best available normals related to time of observations, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

This casualty was caused by a deep cyclonic disturbance that, on the 14th, was central south of Iceland moving southeastward. After reaching Ireland on the 15th, the disturbance crossed the Bay of Biscay to the Iberian Peninsula, which it reached on the 18th and thereafter appeared to divide into two parts, one of which moved back again toward Ireland, greatly weakened in intensity. The movement of this disturbance between the 14th and 17th, within which time the *Saxilby* foundered, is shown in charts VIII to XI.